

DOCUMENT-IDENTIFIER: US 6039923 A

TITLE: Method and kit for monitoring mammalian reproductive cycles

Abstract Text (1):

A kit for monitoring mammalian reproductive cycles by monitoring variations in the quantity of one or more low molecular weight volatile compound having a molecular weight of less than 50 grams per mole present in a body constituent sample is disclosed. Samples of a body constituent selected from the group consisting essentially of humoral fluid, breath and body cavity air are collected from a female mammal a multiple number of times during the reproductive cycle. The quantity of a low molecular weight volatile compound in each sample is measured. In the preferred embodiment, the low molecular weight volatile compound, acetaldehyde, will be measured and monitored. Variations in the quantity of the low molecular weight volatile compound appearing in each sample is monitored to determine the phase of the mammal's reproductive cycle and to predict the occurrence of ovulation.

CLAIMS:

1. A kit for predicting the occurrence of ovulation in a mammal comprising:

sample collection means for non-invasively collecting a body constituent sample containing acetaldehyde;

a detector for measuring the quantity of the acetaldehyde in the sample; and

means for monitoring variations in the amount of the acetaldehyde in the sample over said mammal's reproductive cycle and comparing those variations with variations that are known to occur over that cycle.

2. The kit of claim 1, wherein the detector is selected from the group consisting of gas chromatographs, ultraviolet-visible spectrometers, and electro-chemical detectors.

3. The kit of claim 1 wherein the sample collection means is an adsorption vessel containing an adsorbent with which acetaldehyde will react.

4. The kit of claim 3, wherein the adsorbent is selected from the group consisting of 1-(hydroxymethyl) piperidine, dinitrophenylhydrazine and 1,3-cyclohexanedione.

5. The kit of claim 1, wherein the sample collection means is a device for collecting a gas sample.

6. The kit of claim 1 further comprising a pump connected to the sample collection means for drawing a sample into the sample collection means.

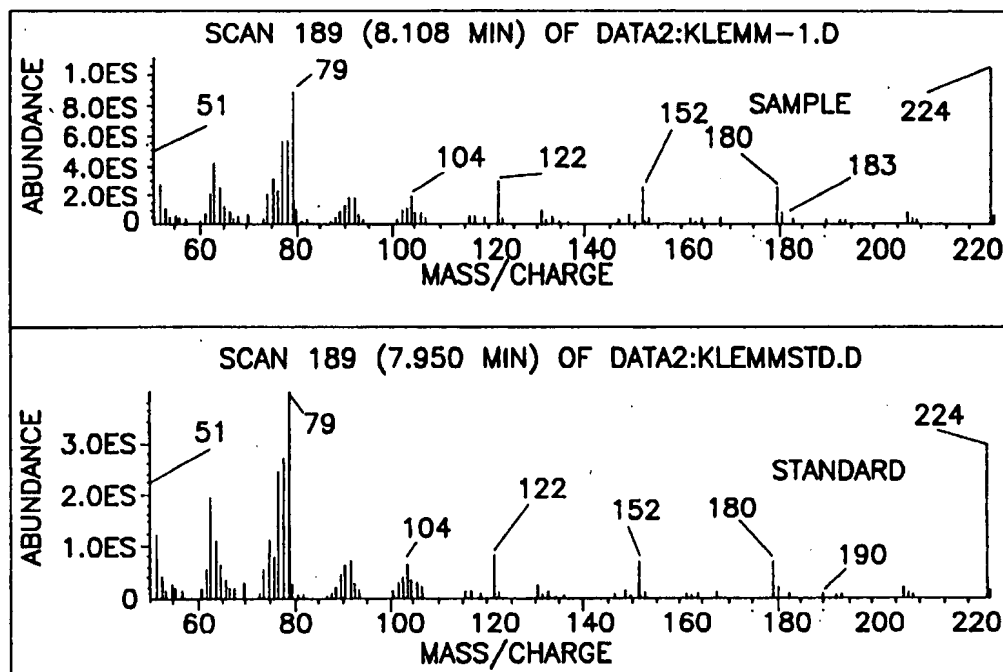
7. The kit of claim 1, wherein the monitoring means generates a signal when the variation in the amount of acetaldehyde in the sample is a variation that is indicative of the onset of ovulation.

8. A kit for predicting the occurrence of ovulation in a mammal comprising:

sample collection means for non-invasively collecting a body constituent sample containing acetaldehyde;

a detector for measuring the amount of the acetaldehyde in the sample; and

FIG. 5a



COMPLETE GC PROFILE AT 1-3 DAYS PRIOR TO ESTRUS

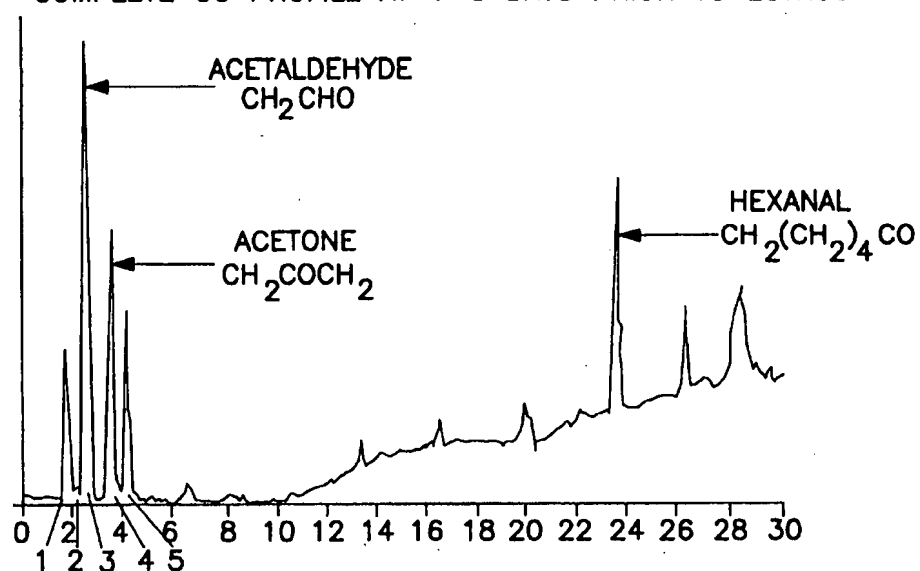


FIG. 5b

means for comparing the amount of acetaldehyde detected in the sample with amounts that are known to occur over that cycle and generating a signal when the detected amount of acetaldehyde is indicative of the onset of ovulation.

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DOCUMENT-IDENTIFIER: US 5432094 A

TITLE: Apparatus and method for collecting, detecting and indicating true alveolar breath collections

Abstract Text (1):

A simplified, user-friendly method and apparatus for collecting and storing a human breath sample and for detecting and indicating whether the stored breath sample is a true alveolar sample. The invention includes in one embodiment thereof a preferably transparent container and a breath delivery device for directing a subject's breath into the container. A closure device is provided for accommodating the insertion of the breath delivery device into the container and for substantially sealing the container. A detector is provided for being positioned within the sealed container for detecting and indicating to an observer whether the breath sample stored in the container is a true alveolar sample.

CLAIMS:

6. A breath collection and storage kit comprising:

a container for collecting and storing a breath sample from a human subject;

a detector adapted to be positioned within said container for detecting and indicating while positioned within said container whether said stored breath sample as stored in said container is a true alveolar sample; and

closure means for closing said container with said breath sample and said detector stored together in said container.

7. A breath collection and storage kit as set forth in claim 6 wherein said detector detects the moisture content in said stored breath sample.

8. A breath collection and storage kit as set forth in claim 7 wherein said detector changes color in response to the detected moisture content.

9. A breath collection and storage kit as set forth in claim 8 wherein said detector contains cobalt chloride which changes color in response to the detected moisture content.

14. A breath sample collection and storage kit for collecting and storing a human breath sample for analysis of the constituent components thereof, comprising:

an elongated, rigid hollow and transparent tubular container having an elongated chamber therein, one end of said container being closed and an opposite end thereof having an inlet portion forming an opening to the interior of said chamber;

a hollow breath delivery means for delivering a breath sample from a subject's mouth, said breath delivery means being insertable into said chamber through said inlet portion to deliver to said chamber a breath sample expelled from said subject's mouth, said chamber having a volume which is substantially less than the volume of a breath sample normally expelled by a human whereby said expulsion of said breath purges said chamber of an initial portion of said breath through said inlet portion leaving only primarily an alveolar portion of the expelled breath;

a closure means for closing and substantially sealing the inlet portion of said tube and said chamber with said breath sample sealed therein; and

a detector adapted to be positioned within said chamber and sealed therein with said breath sample for detecting and indicating while said detector is positioned and sealed within said chamber with said stored breath sample whether said stored breath sample as stored in said chamber is a true alveolar sample.

15. A breath collection and storage kit as set forth in claim 14 wherein said detector detects the moisture content in said stored breath sample.

16. A breath collection and storage kit as set forth in claim 15 wherein said detector changes color in response to the detected moisture content.

17. A breath collection and storage kit as set forth in claim 16 wherein said detector contains cobalt chloride which changes color in response to the detected moisture content.

18. A breath collection and storage kit as set forth in claim 17 wherein said detector is a substantially mineral-free base material which has been impregnated with cobalt chloride.

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DOCUMENT-IDENTIFIER: US 20030216660 A1

TITLE: Breath test apparatus and methodsAbstract Paragraph:

Breath test methods and apparatus for increasing accuracy and reducing the time taken to achieve diagnostically useful results. In order to determine when an increase in isotopic ratio of the exhaled breath is clinically significant, methods are described for the use of a variable and multiple threshold level; for reducing the time taken to determine an accurate baseline level; and for avoiding the effects of oral activity when making measurements. To increase measurement accuracy, methods are described, using the results of the breath tests themselves, of continuous and automatic self-calibration to correct for drifts in the gas spectrometer absorption curves. A method for increasing the spectral stability of cold cathode discharge infra-red light sources for use in breath test instrumentation is described. Calibration checking devices and methods of mandating their use at regular time intervals are described, to ensure maintenance of the accuracy of breath tests.

CLAIMS:

67. A method of ensuring that the correct isotopically labeled substance kit is used for a specific breath test by means of the addition of a marker element to said substance, said marker element being selected to have an immediate and short term effect on the breath test, and the provision within the breath test instrumentation of a detector for said marker element.

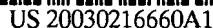
137. A kit for system checking a gas analyzer comprising at least one calibration checking unit and a plurality of disposable sampling tubes for each of at least one calibration checking unit.

138. A kit for system checking a gas analyzer according to claim 137, and wherein at least one of said sampling tubes comprises a fluid filter.

139. A kit for system checking a gas analyzer comprising: at least one calibration checking unit capable of interactive communication with said gas analyzer; and a plurality of disposable sampling tubes for each of said at least one calibration checking unit.

140. A kit for system checking a gas analyzer according to claim 139, and wherein at least one of said sampling tubes comprises a fluid filter.

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Ben-Oren et al.

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(57) **ABSTRACT**

Breath test methods and apparatus for increasing accuracy and reducing the time taken to achieve diagnostically useful results. In order to determine when an increase in isotopic ratio of the exhaled breath is clinically significant, methods are described for the use of a variable and multiple threshold level; for reducing the time taken to determine an accurate baseline level; and for avoiding the effects of oral activity when making measurements. To increase measurement accuracy, methods are described, using the results of the breath tests themselves, of continuous and automatic self-calibration to correct for drifts in the gas spectrometer absorption curves. A method for increasing the spectral stability of cold cathode discharge infra-red light sources for use in breath test instrumentation is described. Calibration checking devices and methods of mandating their use at regular time intervals are described, to ensure maintenance of the accuracy of breath tests.

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